THE BOTANY OF CAPTAIN COOK'S FIRST VOYAGE.

Illustrations of the Botany of Captain Cook's Voyage Round the World in H.M.S. "Endeavour" in 1768–71. By the Right Hon. Sir Joseph Banks and Dr. Daniel Solander, with Determinations by James Britten. Part I.: Australian Plants. 101 Plates, with descriptive letterpress. (London: Printed by order of the Trustees of the British Museum. All Booksellers. 1900.)

"BETTER late than never" may be said of the book the title of which is given above. It is a curious fact that the scientific results of several of the most important and most costly voyages of discovery, both English and foreign, have either not been published at all, or only in part, and in a fragmentary manner. Cook's first voyage is, perhaps, the most notable example of unfinished works of this kind in the history of British exploration. This is the more to be deplored, because collecting and methodical investigation were carried out on a scale previously unknown, and an immense sum was subsequently expended by Sir Joseph Banks in preparing the botanical results for publication. This is not the place to enter into the causes of the cessation of this part of the work; but it was not the only part that was long belated. It was not till 1893 that Captain Cook's own "Journal" was published, edited by Sir William Wharton; and three years later appeared Banks's "Journal" of that memorable voyage, edited by Sir Joseph Hooker. Although I have said "better late than never," it is obvious that the illustrations now in course of being issued have been, to some extent, forestalled, and the letterpress is historically interesting, rather than a contribution to science. According to the prospectus the complete work will comprise 800 plates; these will include a series illustrating the botanical collections of Cook's second voyage, when the Forsters, father and son, were the naturalists. Sydney Parkinson was the botanical artist on the first voyage, but he and the two other artists all died on the voyage, and their work was left in an unfinished condition. So much has been written about the plates now being issued and the desirability of their publication, that something superior to what they really are was probably expected by most people. Indeed it is difficult to suppress a feeling of disappointment. Compared with the botanical illustrations of other expeditions of discovery of a little later date, they are hard and unattractive, and floral dissections are almost entirely wanting. They lose, too, in effect, as they are transfers and not direct impressions of the original engravings on copper. The majority of the plates were engraved from drawings by F. P. Nodder, prepared from Parkinson's sketches and the dried specimens, and only the former name appears on the plates. Our remarks on this point, however, should be regarded in the light of explanation rather than criticism, because after all we must not forget that their publication has been delayed more than a century. Of course, it is highly regrettable that they were not published at the time, so that they might have been more fully utilised in the many publications that have appeared during the last century and a quarter on Australasian and Pacific Islands botany. A fact of great importance is that a comparatively small number of the plants here depicted had previously been figured. Mr. Britten has most conscientiously reproduced Solander's descriptions and remarks, even to the extent of palpable errors. Thus the locality Endeavour River is given throughout as Endeavour's River, and "petioli ½-uncialia," instead of unciales. But perhaps this course is more satisfactory than any attempt at improving the original; and errors of the latter kind may be due to slips of the transcriber. The keenest reader may overlook false terminations in Latin descriptions, and the most ready writer is apt to make them.

On the other hand, our thanks are due to Mr. Britten for much valuable information, and the correction of many current errors. Doubtless when the time comes for the "Introduction," some account will be given of the countries or districts explored, and the botanical results summarised.

With regard to nomenclature, it is fortunate that, although the rule of priority has been strictly followed, there are few suppressions of familiar names; but that is because there were few opportunities. Of course, the familiar names appear, but only as synonyms. Mr. Britten is an uncompromising disciple of the school of reformers, and he has been permitted to exercise his will in this national publication. Thus *Ionidium* becomes *Calceolaria;* and the calceolarias that everybody is familiar with have *Fagelia* for their generic name. *Cosmia* takes the place of *Calandrinia; Damapana* that of *Smithia;* and *Caulinia* that of *Kennedya.* The complications that such changes cause are almost interminable, as the revival of one name may affect half-a-dozen other well-established generic appellations. But this is not the place to discuss the question. Botanists will be thankful to the Trustees of the British Museum for this valuable addition to their pictorial books, which is at the same time a monument to some of the scientific pioneers in British exploration.

W. BOTTING HEMSLEY.

OUR BOOK SHELF.

Fancy Water-Fowl. By F. Finn. Pp. 45. Illustrated. (London: *Feathered World* Office, 1900.)

MR. FINN, especially to Indian readers, is such a well-known writer on popular ornithology in more than one journal that the reproduction of a series of his articles in book-form can scarcely fail to be welcomed by a wide circle. And in selecting ornamental, or "fancy," water-fowl as a subject, he has hit upon one which appeals to a large number of bird lovers, if for no other reason than the facility with which these handsome birds can be reared and kept in confinement, even when the available space is limited.

The author has confined himself, on the advice of a lady friend, to well-known species, and in the selection he has made he is, on the whole, to be congratulated. We should, however, have liked to see mention made of the so-called Coscoroba Swan of South America, on account of its very peculiar organisation, although we are well aware that, chiefly owing to its delicate constitution, it is seldom seen in European collections.

Both the illustrations and the text have been reproduced in their original guise from the *Feathered World.* With regard to the page plates there is considerable individual variation in their degrees of excellence, the figure of the Spotted-bill Duck, forming the frontispiece, being decidedly superior to that of Rosy-billed Pochards which comes later, the last-mentioned being somewhat coarse

and blurred in outline. Indeed, we venture to think that if a second edition be called for it would be a decided improvement if the plates were photographed down to octavo size, while at the same time the text might be printed in larger type.

As it is, however, the book is decidedly attractive, and ought to prove indispensable to all breeders of ornamental water-fowl. R. L.

Catalogue of Eastern and Australian Lepidoptera Heterocera in the Collection of the Oxford University Museum. Part ii. Noctuina, Geometrina and Pyralidina. By Col. C. Swinhoe. Pterophoridæ and Tineina. By the Right Hon. Lord Walsingham and John Hartley Durrant. Pp. vi + 630; with 8 plates. (Oxford: Clarendon Press, 1900.)

THE first volume of this important work was published as long ago as 1892; it included the Sphinges and Bombyces; and the second and concluding volume, which is nearly twice as thick as the first, has at length been issued.

A great number of *Lepidoptera Heterocera* (moths) were described by the late Francis Walker, not only from the British Museum, but from various private collections, chiefly from that of W. Wilson Saunders. After the death of the latter, large portions of his collection found their way into the Oxford Museum, and the types have now been carefully identified, and a considerable number figured. This is extremely important, as it will enable lepidopterists at a distance to identify species with more certainty than by descriptions alone; and a figure also helps to fix the identity of a species in case the type should be lost or destroyed.

About 2340 species of moths are enumerated in the present volume, and we note that in addition to Walker's types many described by Mr. F. Moore and other entomologists are likewise contained in the Oxford Museum; nor must we omit to mention that several new genera and species are described and figured by the authors of the Catalogue for the first time. However, the work is one which, notwithstanding its importance, appeals so exclusively to specialists that a more lengthy notice is hardly required in the columns of NATURE.

W. F. K.

Sir Stamford Raffles: England in the Far East. By H. E. Egerton, M.A. Pp. xx + 290. (London: Unwin, 1900.)

THIS volume, which is one of a series, entitled "Builders of Greater Britain," and edited by Mr. H. F. Wilson, does not call for much comment in a journal devoted to science. The author of the biography naturally deals mainly with Sir Stamford Raffles as an administrator in the Straits Settlements and the Malay Archipelago, and only incidentally, and that very briefly, refers to him as a zoologist. Raffles was, as everybody knows, one of the founders, and the first president, of the Zoological Society of London; and his bust adorns the lion house of that society. Mr. Egerton, in narrating this fact, is chiefly impressed by "how much innocent pleasure this distinguished child-lover has given to countless thousands of children" by his successful efforts in this direction. He mentions, however, the collections which he took care to make, and which were largely reported upon by Dr. Horsfield. In those days much that was brought back from the East in the way of zoological specimens was quite new to science, and the animals had to have names given to them; it is not such a great compliment as Mr. Egerton seems to think to name a species *Gymnura rafflesii*, after Sir Stamford. This compliment is usually paid to the capturer of a new form, and it is ridiculous to say that "Raffles' reputation in the scientific world is attested by the fact that the great French naturalist, M. Geoffroy St. Hilaire, described a new variety of animal under the specific name 'Rafflesii.'"

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

The Teaching of Mathematics.

PROF. JOHN PERRY has asked me to write something in criticism of the views he has lately expressed about the teaching of mathematics. I am inclined to ask, What is the use? He knows my views pretty well, and others too; and those who don't can learn them if they want to by buying my books. That is the best way, as it brings in one-and-threepences, and so does some good. I think there is a great deal to be said on both sides, and that if you are a born logic-chopper you will think differently from Faraday. The subject is too large, and I will only offer a few remarks about the teaching of geometry, based upon my own experience and observations. Euclid is the worst. It is shocking that young people should be addling their brains over mere logical subtleties, trying to understand the proof of one obvious fact in terms of something equally, or, it may be, not quite so obvious, and conceiving a profound dislike for mathematics, when they might be learning geometry, a most important fundamental subject, which can be made very interesting and instructive. I hold the view that it is essentially an experimental science, like any other, and should be taught observationally, descriptively and experimentally in the first place. The teaching should be a natural continuation of that education in geometry which every child undergoes by contact with his surroundings, only, of course, made definite and purposeful. It should be a teaching of the broad facts of geometry as they really exist, so as to impart an all-round knowledge of the subject. It should be Solid as well as Plane; the sphere and cube, &c., as well as the usual circle and square; models, sections, diagrams, compasses, rulers, &c., every aid that is useful and practical should be given. And it should be quantitative as well. The value of π should be *measured*; it may be done to a high degree of accuracy. So with the area of the circle, ellipse and all sorts of other things. The famous 47th. The boy who really measures and finds it true will have grasped the fact far better than by a logical demonstration without adequate experimental knowledge; for it happens that boys, who are generally very stupid in abstract ideas, learn a demonstration without knowing what it is all about in an intelligent manner. It may be said by logicians that you do not *prove* anything in this way. I differ. It might equally well be said that you prove nothing by *any* physical measurements. You have really proved the most important part. What a so-called rigorous proof amounts to is only this, that by limitation and substitution, arguing about abstract perfect circles, &c., replacing the practical ones, you can be as precise as you please. Now when a boy has learnt geometry, and has become competent to reason about its connections, he may pass on to the theory of the subject. Even then it should not be in Euclidean style; let the invaluable assistance of arithmetic and algebra be invoked, and the most useful idea of the vector be made prominent. I feel quite certain that I am right in this question of the teaching of geometry, having gone through it at school, where I made the closest observations on the effect of Euclid upon the rest of them. It was a sad farce, though conducted by a conscientious, hard-working teacher. Two or three followed, and were made temporarily into conceited logic-choppers, contradicting their parents; the effect upon most of the rest was disheartening and demoralising. I also feel quite certain about the experiential and experimental basis of space geometry, though that opinion has been of slow growth. If I understand them rightly, it is generally believed by mathematicians that geometry is pre-existent in the human mind, and that all we do is to look at nature and observe an approximate resemblance to the properties of the ideal space. You might assert the same pre-existence of dynamics or chemistry. I think it is a complete reversal of the natural order of ideas. It seems to me that geometry is only pre-existent in this limited sense; that since we are the children of many fathers and mothers, all of whom grew up and developed their minds (so far as they went) in contact with nature, of which they were a part, so our brains have grown to suit. So the child takes in the facts of space geometry